

CLAIMS

What is claimed is:

1. In a planning model characterizing an enterprise, a method of computing decisions for a set of decision variables comprising:

generating a planning function describing said planning model, said planning function depending upon said set of decision variables;

separating said planning function into independent planning functions, each of said independent planning functions depending upon different ones of said set of decision variables;

independently optimizing each of said independent planning functions to obtain said decisions for said different ones of said set of decision variables; and

presenting an outcome of said optimizing operation, said outcome indicating said obtained decisions.

2. A method as claimed in claim 1 wherein said generating operation defines said planning function to be a non-linear function of at least one of said decision variables.

3. A method as claimed in claim 2 wherein said non-linear function is continuous.

4. A method as claimed in claim 2 wherein said non-linear function is discontinuous.

5. A method as claimed in claim 1 wherein:
said planning model incorporates a primary objective and a strategic objective of said enterprise;
said method further comprises:
defining a primary objective function describing said primary objective, said primary objective function including said set of decision variables; and
defining a strategic objective function describing said strategic objective, said strategic objective function including a subset of said decision variables; and
said generating operation incorporates said primary objective function and said strategic objective function within said planning function.

6. A method as claimed in claim 5 further comprising:
specifying a plurality of values for a strategic factor, said strategic factor being configured to adjust an influence that said strategic objective has on said planning model; and
coupling said strategic objective function with said strategic factor.

7. A method as claimed in claim 6 wherein said independently optimizing operation optimizes said independent planning functions for each of said values of said strategic factor.

8. A method as claimed in 5 wherein:
said strategic objective is a first strategic objective;
said method further comprises defining a second strategic objective function describing a second strategic objective of said enterprise, said second strategic objective function including a second subset of said decision variables;
said generating operation further incorporates said second strategic objective function within said planning function; and
said presenting operation comprises providing an interaction of said primary objective function, said first strategic objective function, and said second strategic objective function.

9. A method as claimed in claim 8 further comprising:
specifying a plurality of values for a second strategic factor, said second strategic factor being configured to adjust an influence that said second strategic objective has on said strategic planning model;
coupling said second strategic objective function with said second strategic factor; and
said optimizing operation further includes independently optimizing said planning function for each of said second values of said second strategic factor.

10. A method as claimed in claim 1 wherein said independently optimizing operation comprises selecting an optimization algorithm from a group comprising a closed form solution, a one dimensional maximization of continuous decision variables, a one dimensional maximization of discrete variables, and a general multidimensional method.

11. A method as claimed in claim 1 wherein said planning model incorporates a primary objective of said enterprise, and said method further comprises:

defining a primary objective function describing said primary objective, said primary objective function including said set of decision variables, and said generating operation incorporating said primary objective function within said planning function;

determining a coupling between said decision variables in said primary objective function;

introducing an embedded constraint into said primary objective function; and

following said introducing operation, performing said independently optimizing operation to optimize said primary objective function while concurrently satisfying said embedded constraint.

12. A method as claimed in claim 11 wherein:

said introducing operation comprises:

including an embedded constraint variable for said embedded constraint in said primary objective function; and

defining an embedded constraint function to include said embedded constraint variable;

said generating operation comprises constructing said planning function by combining said primary objective function and said embedded constraint function; and

said independently optimizing operation comprises providing said decisions which optimize said primary objective function while concurrently satisfying said embedded constraint function.

13. A method as claimed in 12 further comprising:
specifying a plurality of values for a constraint factor,
said constraint factor being configured to adjust an influence
that said embedded constraint has on said planning model; and
coupling said embedded constraint function with said
constraint factor.

14. A method as claimed in claim 13 wherein said
independently optimizing operation optimizes said independent
planning functions for each of said values of said constraint
factor.

15. A method as claimed in claim 1 wherein said presenting
operation comprises providing said decisions for said different
ones of said set of decision variables that optimize said each
of said independent planning functions.

16. A method as claimed in claim 1 wherein said presenting
operation comprises providing a plurality of scenario points,
each of said plurality of scenario points being associated with
said decisions for said decision variables that optimize said
each of said independent planning functions.

17. A computer-readable storage medium containing executable code for instructing a computer to compute decisions for a set of decision variables of a planning model characterizing an enterprise, said planning model incorporating a primary objective and a strategic objective of said enterprise, and said executable code instructing said computer to perform operations comprising:

- defining a primary objective function describing said primary objective, said primary objective function including said set of decision variables;

- defining a strategic objective function describing said strategic objective, said strategic objective function including a subset of said decision variables;

- generating a planning function describing said planning model, said generating operation incorporating said primary objective function and said strategic objective function within said planning function, and said planning function including a non-linear function of one of said decision variables;

- separating said planning function into independent planning functions, each of said independent planning functions depending upon different ones of said set of decision variables;

- independently optimizing each of said independent planning functions to obtain said decisions for said different ones of said set of decision variables; and

- presenting an outcome of said optimizing operation, said outcome indicating said obtained decisions.

18. A computer-readable storage medium as claimed in claim 17 wherein said executable code identifies selection of an optimization algorithm from a group comprising a closed form solution, a one dimensional maximization of continuous decision variables, a one dimensional maximization of discrete variables, and a general multidimensional method.

19. A computer-readable storage medium as claimed in claim 17 wherein said executable code instructs said computer to perform further operations comprising:

specifying a plurality of values for a strategic factor, said strategic factor being configured to adjust an influence that said strategic objective has on said planning model;

coupling said strategic objective function with said strategic factor; and

optimizing said independent planning functions for each of said values of said strategic factor.

20. A computer-readable storage medium as claimed in claim 17 wherein said strategic objective is a first strategic objective, and said executable code instructs said computer to perform further operations comprising:

defining a second strategic objective function describing a second strategic objective of said enterprise, said second strategic objective function including a second subset of said decision variables;

incorporating said second strategic objective function within said planning function; and

providing an interaction of said primary objective function, said first strategic objective function, and said second strategic objective function.

21. A method of computing decisions for a set of decision variables of a planning model characterizing an enterprise, said planning model incorporating a primary objective of said enterprise, said method comprising:

defining a primary objective function describing said primary objective, said primary objective function including said set of decision variables;

generating a planning function describing said planning model, said planning function including said primary objective function, and said planning function depending upon said set of decision variables;

determining a coupling between said decision variables in said primary objective function;

introducing an embedded constraint into said primary objective function;

separating said planning function into independent planning functions, each of said independent planning functions depending upon different ones of said set of decision variables, said independent planning functions including said embedded constraint;

independently optimizing each of said independent planning functions to obtain said decisions for said different ones of said set of decision variables, said optimizing operation optimizing said primary objective function while concurrently satisfying said embedded constraint; and

providing said decisions for said different ones of said set of decision variables that optimize said each of said independent planning functions.

22. A method as claimed in claim 21 wherein said generating operation defines said planning function to include a non-linear function of at least one of said decision variables.

23. A method as claimed in claim 21 wherein:

said introducing operation comprises:

including an embedded constraint variable for said embedded constraint in said primary objective function; and

defining a embedded constraint function to include said embedded constraint variable;

said generating operation comprises constructing said planning function by combining said primary objective function and said embedded constraint function; and

said independently optimizing operation comprises providing said decisions which optimize said primary objective function while concurrently satisfying said embedded constraint function.